

Serial No.: 10/811,565
Docket No.: ECV-5783
Amendment dated August 10, 2007
Response to Office Action dated April 19, 2007

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

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Listing of claims:

1. (Currently Amended) A support frame for a flexible leaflet prosthetic heart valve,
comprising:

10 a plurality of cusps each sized and shaped to support a cusp of a flexible leaflet of
the heart valve; and

a plurality of commissures, one each between each adjacent pair of cusps, the
commissures each having a point of weakness designed to fracture upon repeated relative
movement of the cusps after implantation such that the cusps move substantially
15 independently of each other, wherein the support frame exhibits a substantially continuous
stiffness along the cusps and commissures similar to that resulting from the cusps and
commissures being formed integrally.

2. (Original) The support frame of claim 1, wherein the support frame is a single,
20 continuous, element.

3. (Original) The support frame of claim 2, wherein the support frame is formed from
a continuous, homogeneous material.

25 4. (Original) The support frame of claim 3, wherein the commissures and cusps have
substantially the same material stiffness in bending prior to reaching the point of fatigue.

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5. (Original) The support frame of claim 1, wherein the support frame is made of Nitinol.

6. (Original) The support frame of claim 1, wherein each cusp of the support frame transitions into two commissure regions, and wherein the point of weakness at the commissures comprises a frangible bridge between adjacent commissure regions.

7. (Original) The support frame of claim 6, wherein the frangible bridge comprises a narrow portion of the support frame relative to adjacent portions.

8. (Original) The support frame of claim 6, wherein the point of weakness comprises a notch.

9. (Original) The support frame of claim 6, wherein the commissure regions terminate in enlarged ears on either side of the frangible bridge.

10. (Original) The support frame of claim 9, further including a biocompatible fabric covering the support frame, and wherein the enlarged ears are sized to prevent the commissure regions from poking through the fabric once the frangible bridge has fractured.

11. (Original) A support frame for a flexible leaflet prosthetic heart valve, comprising:
a plurality of cusps sized and shaped to support cusps of flexible leaflets of the heart valve; and

a plurality of commissures, one each between each adjacent pair of cusps, the commissures and cusps being formed integrally of a homogeneous material and the commissures each having a point of weakness designed to fracture upon repeated relative movement of the cusps after implantation whereby the cusps can move substantially independently of each other.

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12. (Currently Amended) The support frame of claim 11, wherein the support frame comprises ~~enprises~~ three cusps and three commissures.

5 13. (Original) The support frame of claim 11, wherein the support frame is made of Nitinol.

14. (Original) The support frame of claim 11, wherein each cusp transitions into two commissure regions, and wherein the point of weakness at the commissures comprises a frangible
10 bridge between adjacent commissure regions.

15. (Original) The support frame of claim 14, wherein the frangible bridge comprises a narrow portion of the support frame relative to adjacent portions.

15 16. (Original) The support frame of claim 14, wherein the point of weakness comprises a notch.

17. (Original) The support frame of claim 14, wherein the commissure regions terminate in enlarged ears on either side of the frangible bridge.

20 18. (Original) The support frame of claim 17, further including a biocompatible fabric covering the support frame, and wherein the enlarged ears are sized to prevent the commissure regions from poking through the fabric once the frangible bridge has fractured.

25 19-23. (Canceled)